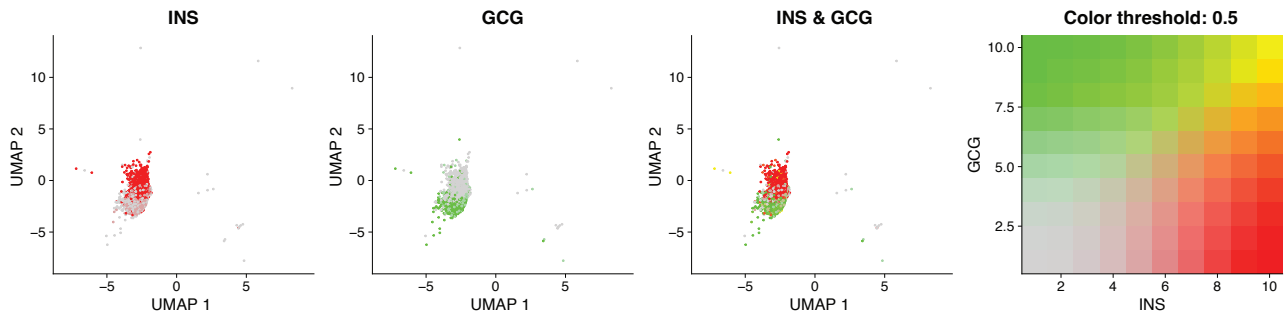**Supplementary Figure 1. Sample representation per cluster.** Proportion of cells in each cluster from all donor samples in HPAP. No clusters have representation from only a small number of donors.

Supplementary Figure 2. Marker gene expression in alpha+beta cluster. Expression level of insulin and glucagon separately, as well as overlaid together, in the alpha+beta cluster. The insulin and glucagon expressing cells within this cluster appear largely distinct.
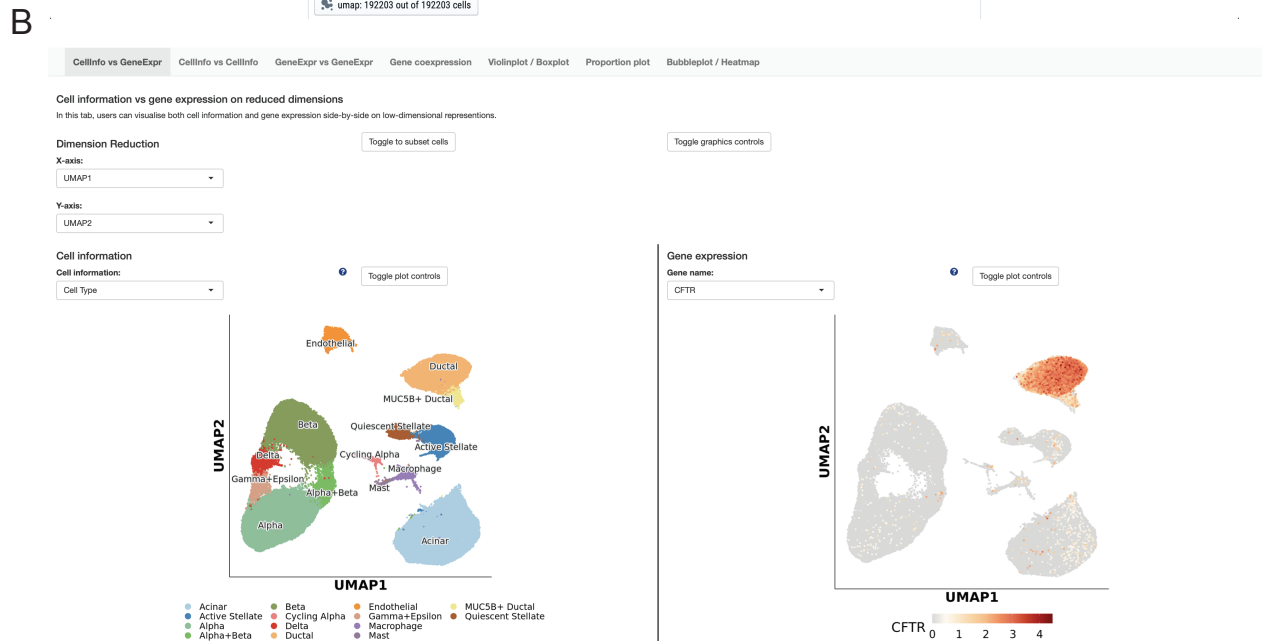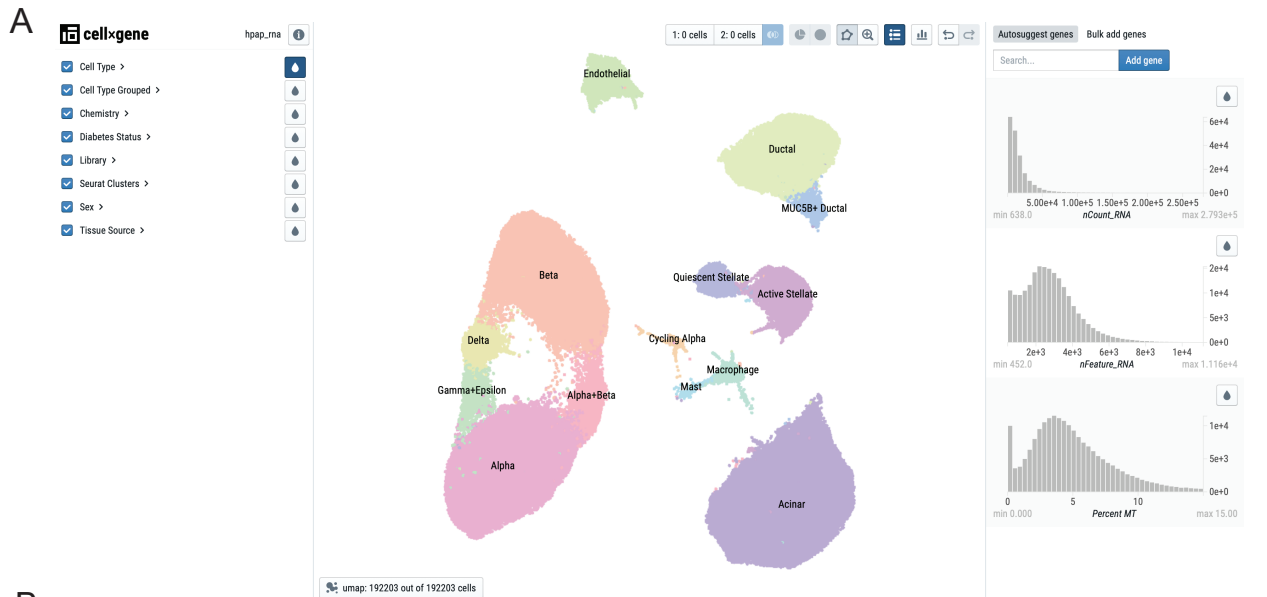
Supplementary Figure 3. Visualizing single cell profiles in islet cell types. (A) Islet single cell object in Cellxgene browser including cell type labels and technical features. (B) Islet single cell object in ShinyCell including cell type labels and expression of selected gene.
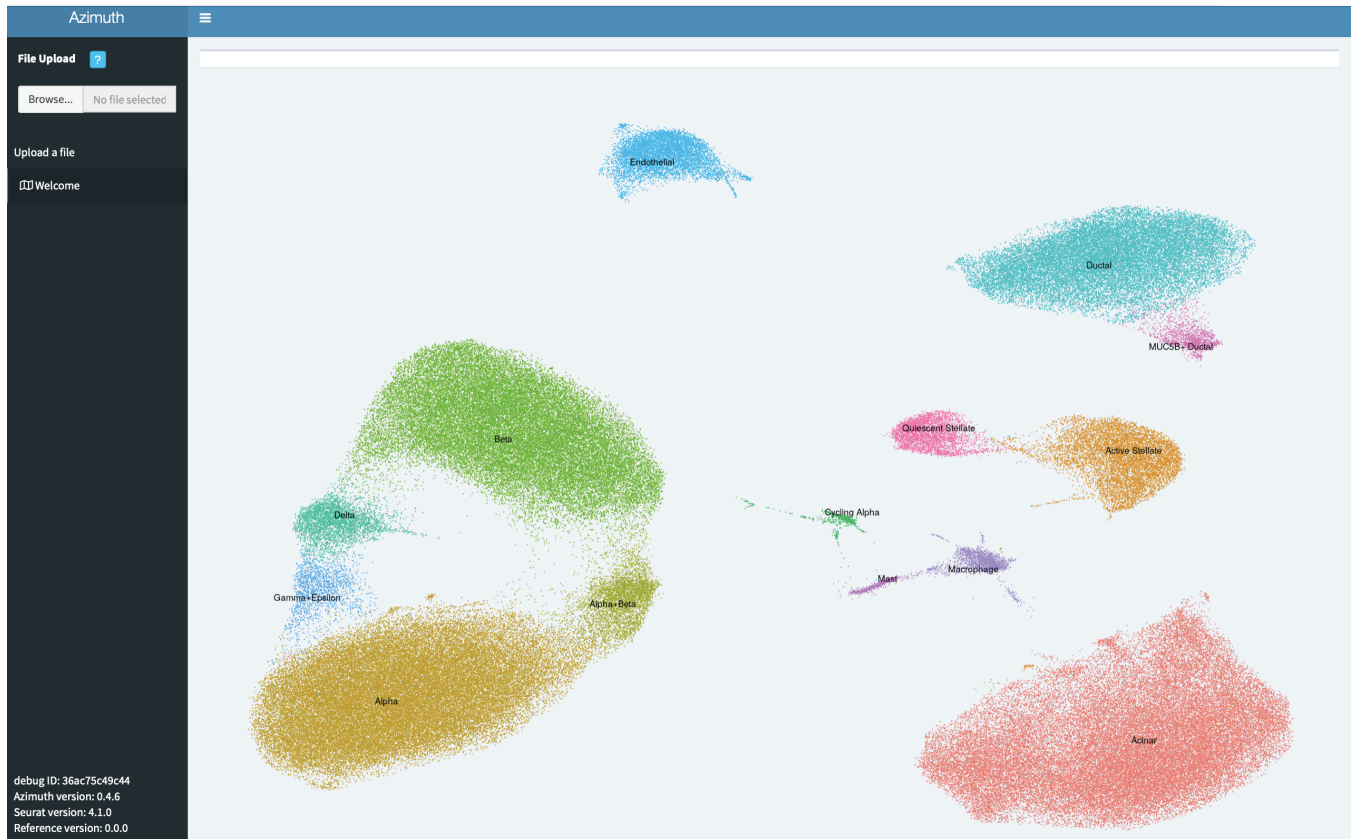
Supplementary Figure 4. Reference mapping of islet single cell gene expression. Screenshot of islet cell type expression in the Azimuth application which enables users to upload their own data and perform annotation of cell type identity.

Supplementary Figure 5. Querying and visualizing islet cell type-specific expression. (A) Interactive table showing normalized expression levels of genes in each identified cell type. (B) Interactive visulization of differential cell type expression in disease states.